

is required. In recent years these applications have had more special reference to the nature and origin of various diseases in our colonies and stations abroad, and the best means to be adopted for coping with them. As an illustration of this side of the society's activity, I may refer to our late inquiry into Malta fever—a disease which for many years so seriously disabled our naval and military establishments in the Mediterranean basin. This investigation was undertaken at the joint request of the Admiralty, War Office, and Colonial Office. Within a few months we were fortunate in discovering the source of the malady, and were able to point out the precautions to be taken in dealing with the fever. The satisfactory result has been attained of almost entirely banishing the disease from the hospitals of Malta. A more difficult and prolonged inquiry has been in progress for some years into the terrible evil of sleeping sickness. The commission sent out to Central Africa by the Royal Society soon ascertained the immediate cause of the malady, but although the investigation has been prosecuted in various directions, no certain cure or preventive has yet been found. A few weeks ago our eminent and intrepid colleague Sir David Bruce, taking with him two officers of the Army Medical Department, returned to Uganda to renew his inquiries on the spot. We have also a committee at work in London endeavouring to discover a drug that may be effectual in the treatment of trypanosome diseases. We sincerely hope that the various efforts now in vigorous operation may be ultimately successful, and thus that in wide tracts of Central Africa which have been so grievously depopulated, this fatal scourge, if not wholly exterminated, may at least be reduced alike in its area of distribution and in the seriousness of its effects. I may add that the Colonial Office recently established a national bureau for the purpose of collecting and disseminating information from all quarters regarding sleeping sickness, and that the Royal Society, at the request of that public department, has been glad to provide for the bureau such office accommodation as the limited space at Burlington House will permit.

Ever since the year 1662 the Royal Society has met on St. Andrew's Day for the purpose of electing its council and officers. This important annual function has been discharged this afternoon, with the result which is before you. The whole body of fellows must sincerely regret that our recent president, Lord Rayleigh, felt himself unable to serve the full period of his tenure of the office. We are all grateful to him for the care and attention which he constantly gave to the business, alike at the meetings of council and at those of the society, over which he presided with unfailing tact and dignity. We trust that he will return from South Africa re-invigorated for the resumption of those studies which, while placing him in the first rank of leaders in science, have reflected so much lustre on the Royal Society. The vacancy in the secretaryship has been filled by the election of Prof. Rose Bradford. Having already served for one year as foreign secretary, he has gained experience in the details of the business of the society, and he assumes his new duties with the heartiest good wishes of his brother-officers and, I am confident, also of the general body of the fellows. In our new foreign secretary, Sir William Crookes, we have a man of world-wide fame, whose election will be hailed abroad with not less approbation than it has received at home.

There was once a time when the Royal Society, so long accustomed to reign alone among the scientific institutions of the country, was disposed to look askance upon the rise of other learned societies the main object of which was the cultivation of some single department of science. Happily that time has long since passed. The most cordial relations now bind the younger offspring to their venerable mother. These special societies, which have so multiplied in our own time, have been of enormous service in advancing the progress of their several departments of inquiry. Science has grown far beyond limits that can be adequately supervised by any single organisation. Almost all the Fellows of the Royal Society belong also to one or more of these societies; but no practical inconvenience arises from any divided allegiance. While chemists, geologists, zoologists, or botanists are loyal

members of their several special societies, they are happy to be included also in the ranks of the Royal Society. They are proud of its prestige, of its traditions, of the large part it has played in the history of British science, and of the high position which it holds among the academies of the world. They recognise its catholicity alike in the selection of its fellows and in the papers which it prints in its publications. They see that while other learned bodies properly concern themselves with their own special fields in the scientific domain, the Royal Society, true to the spirit of its earliest leaders, continues to welcome any worthy addition to any department of natural knowledge, not from its own fellows only, but from outside workers who are found to have something new and of real value to communicate.

In four years hence the Royal Society will complete its fifth half-century. Nevertheless, though old in years, it remains still young in energy and aspiration. With the cooperation of the other societies we look forward to a future not less distinguished and useful than our past has been.

Speeches were also made by Prof. Tilden, Dr. Head, Lord Avebury, the Italian Ambassador, and the Bishop of London.

NOTES.

THE account which we print elsewhere of the anniversary meeting and dinner of the Royal Society contains many interesting statements of work accomplished and undertaken. Of particular interest is the election of Sir Archibald Geikie as president of the society in succession to Lord Rayleigh, who is leaving England for a long visit to South Africa, and has resigned the office held by him with such distinction for the past three years. In nominating Sir Archibald Geikie to the presidency, the council complied with a desire widely expressed in the society, and his election on Monday has given satisfaction, not only to fellows of the society, but also to the wider circle of workers in many departments of intellectual activity who admire his genius both on the scientific and literary sides. As Prof. de Lapparent pointed out in an article upon Sir Archibald Geikie's work contributed to our "Scientific Worthies" series in January, 1893:—"Since nothing in the world is less common than the union of scientific insight and acuteness with a vivid appreciation of nature and a delicate feeling for style, it is not strange that Sir Archibald's fame has passed far beyond the circle of professional men." The article showed that the claims of Sir Archibald Geikie to the highest form of recognition in the scientific world are of outstanding importance. Of all British geologists he has long been acknowledged as the most distinguished, and his election to the presidential chair of the Royal Society has given universal satisfaction.

WE regret to learn that M. Albert Gaudry, foreign member of the Royal Society, died on Sunday, November 29.

WE notice with regret the announcement that Dr. E. T. Hamy, professor of anthropology at the Paris Museum of Natural History and member of the Academy of Medicine, died on November 18, in his sixty-sixth year.

THE death is announced of Dr. O. T. Mason, head curator of the department of anthropology of the U.S. National Museum.

It is announced that the Nobel prize for physics has been awarded to Prof. M. Planck, professor of mathematical physics in the University of Berlin; and the prize for chemistry to Prof. E. Rutherford, F.R.S., Langworthy professor of physics in the University of Manchester.

PROF. R. ABEGG, of Breslau, informs us that the award of 2500 marks made to him by the Berlin Academy of Sciences was not a prize, as announced in *NATURE* of November 26 (p. 104), but a grant to enable him to purchase the gallium required for the physicochemical studies which he has undertaken of that substance.

THE death is reported, after a long illness, of Dr. William Keith Brooks, professor of zoology at the Johns Hopkins University, Baltimore. He was born at Cleveland, Ohio, in 1848, and had been a member of the staff of Johns Hopkins since its foundation in 1876. He was the author of "A Handbook of Invertebrate Zoology," "The Stomatopoda of H.M.S. *Challenger*," "The Foundations of Zoology," "The Oyster," and "The Report of the Maryland Oyster Commission." He was popularly known as "the father of the oyster culture." He was a member of the National Academy of Sciences and of the American Philosophical Society.

THE gold medal awarded under the Shaw Trust for Industrial Hygiene was presented to Prof. Galloway, at the Royal Society of Arts, on November 18, "In recognition of his valuable researches into the action of coal dust in colliery explosions, the outcome of which researches has been the provision of means by which the risk of such accident is materially diminished, and a consequent great saving of human life effected."

PROF. BEYERINCK, of Delft, writes to point out that the spectra of planets illustrated by Prof. P. Lowell in *NATURE* of November 12, p. 42, resemble the absorption spectra of chlorophyll and accompanying pigments of different plants. For instance, "The spectra of Uranus and Neptune coincide with a spectrum produced by a chlorophyll solution containing much anthocyan, or perhaps still more with the absorption spectrum of a living *Porphyr*a."

THE annual exhibition of apparatus is to be held by the Physical Society on Friday evening, December 11 (from 7 p.m. to 10 p.m.), at the Royal College of Science, South Kensington. From the programme, of which we have received an advance proof, there appear to be many items of considerable interest to both physicists and electrical engineers. We understand that invitations have been given to the Institution of Electrical Engineers, the Faraday Society, the Optical Society, and the Röntgen Society. Admission, however, except to Fellows of the Physical Society, will be by ticket only, and therefore members of the societies just mentioned desiring to attend the exhibition should apply to the secretary of the society to which they belong.

FOR nearly a year Lieutenant E. H. Shackleton, R.N.R., and his party of explorers have been engaged in exploration in South Polar regions. The explorers were taken to their landing-place in the Far South by the *Nimrod*, which then returned to Lyttelton. Despatches from New Zealand now state that the vessel has just left again for King Edward VII. land to take on board the explorers. It is anticipated that the *Nimrod* will reach the landing-place in about six weeks. Lieutenant Shackleton and his party will, it is hoped, put in an appearance before the end of February next, after which the *Nimrod* will make her way back to Lyttelton.

WE learn from the *Times* that the Admiralty will restore Halley's grave in the old burial-ground of Lee Parish Church. Dr. E. Halley, who was the Astronomer Royal from 1721 to 1742, was given the temporary rank of a captain in the Navy, and commanded a ship of war

in 1698-1701, for the purpose of making observations for magnetic variations. With Sir Isaac Newton, he was responsible for the Act of 1714 offering a reward to any person who should devise a method for the discovery of the longitude at sea. His grave was last restored by the Admiralty in 1854.

THE Academy of Natural Sciences of Philadelphia has decided to confer the Hayden memorial medal for 1908 on Mr. J. M. Clarke, State Geologist of New York, in recognition of his distinguished services to geological science. The medal is a memorial which Mrs. E. W. Hayden endowed in honour of her husband, Dr. Ferdinand V. Hayden, who was for several years director of the Geological and Geographical Surveys of the territories, remaining one of the four principal geologists to the United States Geological Survey from its organisation in 1879 until his death. Provision was at first made to confer a bronze medal and the remainder of the interest of the fund annually as a recognition of the best publication, exploration, discovery, or research in the sciences of geology or palæontology. The bronze medal was awarded annually until 1899, when the deed was modified so as to provide for the awarding of a gold medal once every three years.

A BILL for putting in force the decisions of the Berlin Wireless Telegraphy Conference of November, 1906, as embodied in an international convention, has been laid before the French Chamber. The Paris correspondent of the *Times* gives the following details of the convention:—The conference has fixed wave-lengths, one of 300 metres, the other of 600 metres, for the transmission of public messages by the wireless current. All stations must be able to produce and to receive one, at all events, of these two wave-lengths. All public correspondence must be restricted to one of these wave-lengths. A coast station, however, can use other wave-lengths for long-distance communications, or for messages other than those transmitted by the public, provided that these wave-lengths are not under 600 metres and are not more than 1600 metres. Stations on board ship must use the 300-metre wave-length. They are permitted, however, to use other wave-lengths as well, provided that these are under 600 metres. Ships of small tonnage will be allowed to use a wave-length below 300 metres.

DURING the past week two important decisions have been announced in the British Courts of Appeal as to the definition of the term mineral. The question is of both scientific and commercial interest. When a railway buys land under compulsory powers, the minerals under the surface are reserved to the landowner, and have to be subsequently purchased by the railway company if at any time the proprietor is able to mine them. The railway companies are accordingly anxious to restrict the term mineral within narrow limits. The Court of Appeal, as announced in the *Times* of November 24, has unanimously confirmed the decision by Mr. Justice Eve in the case of the Great Western Railway Company against the Carpella Mining Company, that the china clay so extensively worked in Cornwall and Devonshire is a mineral. The Upper Court in Edinburgh, on the same day, re-affirmed the decision that in Scotland sandstone is a mineral, by dismissing an appeal by the North British Railway Company in reference to the working of sandstone beside the railway station at Shettleston.

THE appointment by the Government of a commission to register ancient monuments with the view of their better protection has been widely welcomed, but the

Government might do much to protect such remains by insisting that its own officials should treat them with consideration. One of the remarkable megalithic ruins of Malta appears to have just had a narrow escape, as in order to avoid the extra cost of a slight diversion of a new wall on the Corradino outside Valetta, one of the two most accessible of the archaeological treasures of Malta was to have been ruthlessly swept away. Money for the wall was not available during the current year, so its erection was postponed, and we understand that in consequence of the protests by the Maltese archaeologists and the intervention of the civil authorities the Admiralty officials have agreed that the wall shall be so diverted as to leave the megalithic remains uninjured. During the recent correspondence in the *Times* on the danger to the stone circles of Dartmoor, attention was directed to the destruction of a prehistoric stone group on land which had been sold to the War Office on the understanding that the antiquities should be preserved.

THE Royal Geographical Society has received from Dr. M. A. Stein an account of the final stage of his expedition into Central Asia. From an article in the *Times*, it appears that Dr. Stein started on August 1 last on his expedition to the sources of the Yurung-kash, or Khotan river. After making his way through the gorges of Polu to the northernmost high plateau, he turned to the west and succeeded in reaching the deep-cut valley of Zailik, which drains into the Yurung-kash. Terribly rugged as the valley of Zailik is, Dr. Stein ascended from it the high spurs coming down from the main Kwen-lun range northward, and by establishing survey stations was able to map the greater portion of the region containing the Yurung-kash headwaters. On the south the party proved to be flanked by a range of snowy peaks, rising to 23,000 feet, and clad with glaciers. By crossing side spurs over passes about 18,000 feet high, and ascending the gorge of the main river, they reached after eight marches from Zailik the glacier-bound basin in which the easternmost and largest branch of the river takes its rise. Having traced the river to its head, the party turned east to high ground on the Aksai-chin plateau. The object next accomplished was to reach the valley of the Kara-kash river. For this purpose the route which leads from Polu towards the Lanak-la pass and Ladak was followed. This took them to the uppermost valley of the Keriya river, and past the line of great glaciers which form its true sources. At last the watershed of the Keriya river was left behind, and the exploration of the hitherto unsurveyed ground westwards was commenced. The area before them, which in maps had figured as a high plain called Aksai-chin desert, proved soon of a different character. High snow-covered spurs with valleys between them were found to descend here from the range flanking the Yurung-kash. After a week they reached a large salt lake which an Indian survey party appears to have sighted more than forty years ago, but which has now become dry salt marsh. Continuing the journey to the north-west of it, they struck the traces of the old route by which Haji Habibullah, ruler of Khotan, had endeavoured to establish direct communication between Ladakh and his kingdom. Crossing several side spurs of the main range to the north, they emerged at last, on September 18, in the valley of the easternmost feeder of the Kara-kash.

THE weather summaries issued by the Meteorological Office show that for the autumn season, comprised by the thirteen weeks ended November 28, the mean temperature was largely in excess of the average over the entire area of the United Kingdom. The range of temperature

was excessive, amounting to 60° and upwards in the east of Scotland, the east and south-west of England, and in the Midland counties. The aggregate rainfall was largely in defect, except in the east of Scotland and the south of Ireland, in both of which districts the excess was only a few hundredths of an inch. The deficiency was upwards of 3 inches in the south-east and south-west of England and in the Channel Islands. The duration of bright sunshine was in excess of the average in most of the English districts, the excess for the season amounting to seventy-five hours in the south-east of England, or 8 per cent. of the possible duration. The aggregate rainfall since the commencement of the year is in defect of the average over the entire kingdom, except in the north-west of England and the north of Ireland. In the Channel Islands the deficiency is 8.50 inches, in the south-west of England 6.14 inches, and upwards of 3 inches in the north-east and south-east of England. The excess of sunshine since the commencement of the year amounts to 151 hours, or 4 per cent. of the average duration in the south-east of England.

To Miss Georgina Sweet we are indebted for a copy of a paper, published in vol. xxi. of the Proceedings of the Royal Society of Victoria, on anatomical variation in the Australian tree-frog, *Hyla aurea*.

We are indebted to Mr. A. E. Shipley for a separate copy of his account of the parasites infesting grouse, reprinted from the interim report of the Grouse Disease Commission, and likewise for one of a second paper, reproduced from the second number of *Parasitology*, on a thread-worm infesting the swim-bladder of a trout.

IN their November issue, the editors of *British Birds* announce that they propose to institute further inquiries and investigations in regard to "wood-pigeon diphtheria," and for this purpose request the assistance of observers from all parts of the country, to whom schedules of queries will be supplied on application. Mr. C. B. Ticehurst will, as before, undertake the investigation. It is stated in the course of the notice that the supposed probability of this disease being communicable to man is not countenanced by Mr. Ticehurst.

A MUSEUM at Norwich, organised and maintained by Daniel Boulter, a dealer in curiosities in that city, during a part of the last quarter of the eighteenth century, forms the subject of an interesting paper (read at the Ipswich conference) by Mr. T. Southwell, published in the October number of the *Museums Journal*. To the same issue Dr. F. A. Bather contributes an account of the Lund Museum for the History of Culture, to the opening of which reference has been previously made in our columns.

IMPORTANT developments in regard to the administration of the Indian Museum, Calcutta, are foreshadowed in the report of the conference in regard to museums in India, held at Calcutta in December, 1907. There was a very representative attendance of Indian museum directors and curators (from Kashmir to Madras), and specialisation in the matter of administration was the order of the day. As regards the Indian Museum, it was decided that while the geological and palæontological section will remain, as heretofore, under the control of the director of the Geological Survey, the remaining collections will be placed under four distinct authorities. Archaeology will be handed over to the director-general of archaeology; the principal of the School of Art will assume control of the objects of industrial and fine art; the industrial collections will be transferred to the reporter on economic products; while

the anthropological and zoological collections are to be placed in charge of a superintendent directly responsible to the trustees. An alternative proposal to link up all the sections under the administrative control of a single director, who would likewise be inspector-general for museums in India, was decisively rejected.

WE have to acknowledge the receipt of copies of vol. xxx. of *Bericht des Westpreussischen Botanisch-zoologischen Vereins*, and of the *Schriften der Naturforschenden Gesellschaft in Danzig*, for 1908, the latter being now regarded as a supplement to the former. In the *Bericht* special interest attaches to an account, by Dr. P. Speiser, of the distribution of the reindeer-gadfly (*Theriopterus tarandinus*) in the course of a paper on the fauna of the Barent district. The species ranges all over Siberia, northern Russia, and Scandinavia, but also occurs in a few isolated localities in north Germany, namely, in eastern Prussia near Königsberg, in western Prussia in the Tucheler Heide, as well as in Pomerania, Brandenburg, and Mecklenburg. There are also reports as to its occurrence in Austria and elsewhere. Its existence in these isolated localities may be taken as an indication that the insect has survived in such spots from the date when the reindeer inhabited a much larger area on the Continent than it does at present.

THE October number of the Journal of the Marine Biological Association (vol. viii., No. 3) contains the results of a series of experiments which have been recently conducted with regard to the food of mackerel and the movements of these fishes, with the view of assisting the western fishery. It appears that from April until June inclusive—the main fishery-time in the western districts—when mackerel collect in large shoals, they feed almost exclusively on plankton, and also that the plankton from the contents of the stomachs of the fish is identical with that taken in tow-nets in the neighbourhood of the shoals. During two years it was found that in April zooplankton was in excess of phytoplankton, and that during such times mackerel were more numerous than during the other months. Hence the abundance or paucity of zooplankton appears to be correlated with the greater or less abundance of fish, this being confirmed by the result of five years' experience. As regards the periodical migration of mackerel, it has been already suggested by previous authors that these are not so extensive as has commonly been supposed to be the case, and this is confirmed by the results of the recent observations. In accord with the observations of Cligny, it appears that mackerel return year after year at the close of the shoaling season to certain restricted areas not far distant from the spawning-grounds, and that at present only a few of these areas are known to fishermen. Further, these bottom-shoaling fish seem likewise to feed largely upon plankton. Additional observations are required before the bearing of these facts on the fishery can be fully realised.

BEARING in mind that some of the Central American species of *Sapium* may be found to yield latex containing a valuable percentage of rubber, Mr. H. Pittier has placed on record in the Contributions from the United States National Herbarium (vol. xii., part iv.) the identifications of nine species of the genus collected in Mexico and Central America. Of these, six species from Costa Rica are new to science. It is noted that proterandry is general, if not universal, so that the early flowers are staminate, while the latter are hermaphrodite, and it is doubtful whether any species of *Sapium* are ever dioecious.

THE superintendent of the botanic station at St. Vincent announces in his report for 1907-8 an increase in the export of cotton, and a slightly larger crop during the year, but ventures the opinion that the limit of production has been approached; if this be so, a yield of 175 tons represents the amount of Sea Island cotton that may be expected from the island. The output of cacao, that has increased annually since the effects of the hurricanes, now approximates to the amount of 100 tons. Among the trees that flowered in the gardens, mention is made of *Platymiscium platystachyum*, on account of the fragrance resembling violets diffused by the flowers.

A SUMMARY provided by Mr. G. Evans of the varieties of wheat grown in the Central Provinces of India and Berar has been published by the Department of Agriculture in that territory. In the northern divisions wheat occupies about one-third of the cropped area; in other parts cotton furnishes the chief staple. The varieties are classified under the four groups of hard and soft red and hard and soft white or yellow. A soft white variety is largely grown for export, as it produces a pure white flour; a hard yellow wheat from Nagpur is also exported, principally to southern Europe, for making macaroni and semolina. The author adopts five subspecies of *Triticum sativum*, under which he classifies the fifty varieties enumerated.

WE have received from the Bureau of Entomology of the United States Department of Agriculture a series of bulletins setting forth the beneficial results obtained by spraying with Bordeaux mixture and lead arsenate for codling moth and for the grape-root worm (*Fidia viticida*, Walsh). Another bulletin gives a brief description of the national collection of scale insects (Coccidæ), while others deal respectively with the apple-tree tent caterpillar (*Malacosoma americana*, Fab.), which can be controlled by arsenical washes, and the apple maggot (*Rhagoletis pomonella*, Walsh), which cannot.

ENGLISH students of American methods of agriculture will find much to interest them in a Bulletin (No. 12) recently issued by the Purdue University Agricultural Experiment Station, describing the methods of beef production adopted in Indiana. The information on which the bulletin is based was obtained by a method not uncommon in the States—a circular was sent round containing a full and carefully drawn up list of questions that farmers were requested to answer. The method has sundry disadvantages, but it enables a broad outline to be got out which will give the student all he needs.

AN interesting question in connection with the age of the prehistoric excavations made in search of flints at Brandon, in Suffolk, known as Grime's Graves, has now been set at rest by Mr. W. A. Sturge in the November number of *Man*. These pits were examined in 1870 by Canon Greenwell, who described the results in the Journal of the Ethnological Society (N.S., vol. ii., p. 419). Among the objects found and deposited in the British Museum is an axe of polished stone. In some recent discussions on the age of these excavations it has been urged that they date from pre-Neolithic times; but to establish these conclusions the evidence of Canon Greenwell's axe must in some way or other be got rid of. Hence an attempt has been made to throw doubt on the authenticity of this implement, and it has been suggested that it was surreptitiously introduced during the excavation by one of the workmen. Canon Greenwell fortunately retains a distinct recollection of the circumstances of the find, and gives a graphic account of the incident. Before it was discovered he had noticed markings on the chalk walls of

the pit which could not have been produced by the stag-horn picks usually employed by the workmen in prehistoric times. He guessed that they were the result of blows by a stone axe, the edge of which had become blunted and battered in a peculiar way by use. When the axe was subsequently found imbedded in the chalk, it was immediately recognised to be the identical tool with which these peculiar markings had been made. There can be no question, therefore, of the genuineness of the implement, or that the mutilation of the edge is contemporaneous with the period in which the tool was made and used. It thus supplies conclusive evidence that the pit was excavated during the period when polished stone implements were in use.

THE annual report of the Transvaal Meteorological Department for the year ended June 30, 1907, shows that there is a considerable increase in the number of observers, all of which are volunteers or attached to other departments. The results of observations are arranged in appendices, as in previous reports; in many cases only means are printed, but the individual observations are available for any inquiry in case of need. In addition to the ordinary weather forecasts for the ensuing twenty-four hours, which are exhibited at every postal telegraph office, weekly forecasts have been prepared for the Agricultural Department when required; these are necessarily more indefinite than the daily forecasts. Investigations on various meteorological subjects are in such progress as the limited staff will permit; several papers have been communicated during the year to the *Meteorologische Zeitschrift* and other scientific periodicals. It may be mentioned that a new thermometer screen, constructed by Mr. D. E. Hutchins, with double laths instead of louvres, as in the Stevenson screen, has been under examination during a year. It costs less than the louvered screen, while the results obtained are practically the same.

THE first number of a new scientific monthly, entitled *Ion, a Journal of Electronics, Atomistics, Ionology, Radioactivity, and Raumchemistry*, has just appeared. It is quarto in form, and contains eighty pages, well printed, with a fair number of diagrams, some of which have, however, been prepared from very rough drawings. About fifty pages are devoted to three articles on "The Charge carried by the α Particles," by Mr. F. Soddy; "Uranium and Geology," by Prof. Joly; and "Transmission of Energy in the World of Electrons," by Dr. H. W. Julius. Fifteen pages are devoted to reports on the various fields of work covered by the periodical, and three pages to reviews of ten books. Prof. Joly's paper is evidently an address, but no indication is given as to where it was delivered, and the reports would be increased in value if references to further sources of information were added. Several of the contributions require more careful editing, as they contain expressions which convey little meaning to a reader not well versed in German, but this may be due to the journal being printed in Germany. It would be a great convenience to its readers if it could be issued with the edges of the leaves cut. Notwithstanding these minor defects, which can be easily remedied in future numbers, *Ion* provides a physicochemical journal long needed in this country.

UNTIL 1893, the conservation of mass in chemical reactions was tacitly assumed in all chemical work. In that year H. Landolt published a memoir in which the validity of this assumption was submitted to an experimental control under modern conditions; in no case were any changes in the total mass of the reacting substances

observed outside the limits of experimental error. In a second paper, however, published in 1906, experiments carried out with an improved apparatus appeared to show a slight decrease in forty-two out of fifty-four observations. In a series of control experiments, carried out with vessels in which no chemical reactions were taking place, this decrease was not observed, and Landolt suggested the emission of electrons during chemical reactions as a possible cause of this loss. In last month's number of the *Zeitschrift für physikalische Chemie* the same author contributes a third paper on this subject. In this the slight losses noticed in the earlier paper are traced down to minute volume changes in the glass vessels employed, the after effects of the slight temperature changes accompanying the chemical phenomena. The final conclusion drawn from the results of all the experiments is that no change of mass can be detected as a result of chemical reactions, and the law of the conservation of mass in this case is true within the very small limits of experimental error. Apart from the interest attaching to the rigid proof of this law, universally assumed in all chemical work, the present memoir goes very fully into the effects of changes of temperature on the volume and moisture films of glass vessels, a question arising in all chemical and physical researches involving the accurate weighing of substances in glass.

A CATALOGUE of electrical novelties received from Messrs. F. Darton and Co., Clerkenwell Optical Works, London, E.C., contains descriptions of many simple and cheap motors, dynamos, coils, and other apparatus. The list should be of service in suggesting suitable Christmas presents for youths and others interested in electricity.

A LIST of microscopes and accessories just issued by Messrs. Ross, Ltd., the well-known manufacturing opticians, should be seen by everyone contemplating the purchase of a microscope for pleasure or work in various departments of science. The instruments described are of a high level of construction and efficiency, and each part has been designed with care. The catalogue also contains particulars of new photomicrographic apparatus.

OUR ASTRONOMICAL COLUMN.

MOREHOUSE'S COMET, 1908c.—Writing to the *Astronomische Nachrichten* (No. 4284, p. 194, November 21), Prof. E. C. Pickering transmits a message from Prof. Frost directing attention to the increased brightness of Morehouse's comet towards the end of October. It was easily seen, at the Yerkes Observatory, with the unaided eye, whilst with a small field-glass three or four degrees of tail became visible. With the Zeiss ultra-violet objective-prism camera three exposures on spectrum plates were made by Mr. Parkhurst and Prof. Frost, two of them each of one hour's duration. At the time of writing the measurement of the spectra was not complete, but Prof. Frost suggests that they are of the ordinary hydrocarbon type. As no continuous spectrum is perceptible, it is concluded that the radiations at the time of exposure (October 28) were, to a very large extent, intrinsic.

Prof. Pickering reports that photographs taken at the Harvard Observatory on October 30 show a tail at least nine degrees in length, much longer than on previous nights.

Further evidence of the changes which took place in the appearance of the comet, especially at the end of September and beginning of October, comes from Herr Winkler, of Jena, who observed with a 6-inch refractor. In his notes, published in No. 4280 of the *Astronomische Nachrichten* (November 6), he states that no tail was seen on October 1, although on September 28 a tail 40' in length was observed.